

### AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of forming a ~~single~~ structure attached to a micro-fluidic channel, ~~using a hydrodynamically focused solidifiable fluid and a focusing fluid; the method~~ comprising:

introducing ~~a the~~ hydrodynamically focused solidifiable fluid ~~[[and]]~~  
into a micro-fluidic channel,

wherein the solidifiable fluid comprises a binding material;

introducing a the focusing fluid into the micro-fluidic channel;

hydrodynamically focusing the solidifiable fluid using the focusing fluid; and

solidifying polymerizing a portion of the hydrodynamically focused solidifiable fluid by selectively exposing the portion to an electromagnetic radiation; and  
forming a structure.

~~forming the single structure by both hydrodynamic focusing and lithography by forming a first dimension of the single structure based on hydrodynamic focusing and forming a second dimension of the single structure based on lithography;~~

~~wherein the first dimension and the second dimension are created in different portions of the single structure.~~

2. (Currently Amended) The method of claim 1, wherein the solidifying step ~~forming the single structure~~ comprises solidifying the hydrodynamically focused solidifiable fluid inside the channel.

3. (Currently Amended) The method of claim 2, wherein the solidifying step ~~solidifying~~ comprises polymerizing the hydrodynamically focused solidifiable fluid by heat rather than the

electromagnetic radiation.

4. (Currently Amended) The method of claim 3, wherein the electromagnetic radiation comprises an ~~further comprising promoting polymerization by exposing the hydrodynamically focused solidifiable fluid to~~ ultraviolet radiation.

5. (Canceled)

6. (Currently Amended) The method of claim 1, wherein forming the ~~single~~ structure comprises forming a coating ~~plurality of coatings~~ attached to walls of the channel.

7. (Currently Amended) The method of claim 6, wherein forming the coating[[s]] comprises forming a coating having a greater compatibility than that of the wall of the channel.

8. (Original) The method of claim 7, wherein forming the coating having the greater compatibility comprises forming a coating having a greater biocompatibility than that of the wall of the channel.

9. (Currently Amended) The method of claim 8, wherein forming the biocompatible coating comprises forming a biocompatible anti-fouling coating and wherein the solidifiable fluid comprises an anti-fouling material rather than a binding material.

10. (Original) The method of claim 9, further comprising flowing a fluid containing a biological molecule in the channel containing the biocompatible anti-fouling coating.

11. (Canceled)

12. (Currently Amended) The method of claim 8, further comprising:  
flowing a fluid containing a biological molecule in the channel containing the biocompatible ~~affinity~~ coating; and

binding the biological molecule to the binding [[.]] material of the biocompatible ~~affinity~~

coating.

13. (Currently Amended) The method of claim 1, wherein forming the ~~single~~ structure comprises forming an internal divider wall.

14. (Original) The method of claim 13, further comprising tailoring a permeability of the divider wall to a molecule.

15. (Original) The method of claim 14, further comprising performing a separation by permeating the molecule across the internal divider wall.

16. (Canceled)

17. (Currently Amended) The method of claim 1, wherein forming the ~~single~~ structure comprises forming a pillar having a width that is based on hydrodynamic focusing and a length that is defined by a ~~based on the~~ patterned mask.

18. (Canceled).

19. (Currently Amended) A method of forming a ~~single~~ structure attached to a micro-fluidic channel ~~having a first dimension and a second dimension, the method~~ comprising:

introducing a solidifiable ~~polymerizable~~ fluid and a focusing fluid into a hydrodynamic focusing system having a micro-fluidic channel,

wherein the solidifiable fluid comprises dissolvable nanoparticles;

hydrodynamically focusing the solidifiable ~~polymerizable~~ fluid with the focusing fluid within the micro-fluidic channel; and

solidifying ~~polymerizing~~ a portion of the hydrodynamically focused solidifiable ~~polymerizable~~ fluid by selectively exposing the portion to an electromagnetic radiation to form a ~~forming the single~~ structure

~~by both hydrodynamic focusing and lithography by forming a first dimension of the single structure based on hydrodynamic focusing and forming a second dimension of the single structure based on lithography;~~

~~wherein the first dimension and the second dimension are created simultaneously in different portions of the single structure.~~

20-21. (Canceled).

22. (Currently Amended) The method of claim 19, wherein forming the ~~single~~ structure comprises forming a pillar having a width that is based on hydrodynamic focusing and a length that is defined by a patterned mask ~~based on lithography~~.

23. (Currently Amended) The method of claim 19, wherein forming the ~~single~~ structure comprises forming a plurality of coatings attached to walls of the channel.

24. (Currently Amended) The method of claim 19, wherein forming the ~~single~~ structure comprises forming an internal divider wall.

25. (Currently Amended) The method of claim 24 ~~[[19]]~~, further comprising performing a separation by permeating a molecule across the internal divider wall.

26-33. (Canceled).

34. (New) The method of claim 19, wherein the solidifying step comprises polymerizing the solidifiable fluid inside the channel.